

REMARKS

Summary of the Claim Amendments

1. Independent claims 1, 27 and 40 have been cancelled.
2. Allowable claims 4, 30 and 43 have been rewritten so as to make them the new independent apparatus claims for the application by including in them all of the limitations of their base claims.
3. The dependency of the dependent claims 2-3, 5-12, 28-29, 31-38, 41-42, and 44-51 have been amended so as to make them depend from the new independent claims 4, 30 and 43 of the amended application.

Response to Application's Claim Rejections and Objections

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

I. Rejection of Independent Claim 14 and Its Dependent Claims 15-16 and 18-25 Under §102(b) As Being Anticipated By Katz (USPN 5,921,846)

The Applicants respectfully argue that the Examiner commits clear error in this rejection because of the reasoning given in any one of the following two lines of thought:

A. Method Claim 14 has in its second line a limitation that restricts this method to only those fluid jets that have "entrained (or aspirated – see page 2, line 23) abrasive particles." However, the whole disclosure of Katz pertains to only those jets that utilize a "slurry source 3 containing abrasive particles 4 (col. 2, line 50)." Thus, since Katz discloses no method/s which utilize entrained or aspirated abrasive particles (in fact, Katz never mentions entrained or aspirated particles in its text), it cannot anticipate Claim 14.

B. Since entrained or aspirated particles are, in industrial applications, generally fed to a high speed jet by a "separate port for receiving a flow of abrasive particles," and the Examiner admits on page 4, lines 12-14 that Katz discloses no such element, it follows that entrained or

aspirated abrasive particles are not disclosed in Katz. Thus, the disclosure of Katz cannot anticipate Claim 14.

Wherein, the Applicants note that: *"Anticipation can only be established by a single prior art reference which discloses each and every element of the claimed invention."* Structural Rubber Prod. Co. v. Park Rubber Co., 749 F.2d 707 (Fed. Cir. 1984). *"Absence of a claim element from a prior art reference negates anticipation."* Atlas Powder Co. v. E.I. duPont de Nemours & Co., 750 F.2d 1569 (Fed. Cir. 1984). *"It is axiomatic that for prior art to anticipate under §102 it has to meet every element of the claimed invention."* Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, (Fed. Cir. 1986). *"For a prior art reference to anticipate in terms of 35 U.S.C. §102, every element of the claimed invention must be identically shown in a single reference ..."* In re Bond, 910 F.2d 831 (Fed. Cir. 1990).

If Katz does not anticipate independent Claim 14, it follows that Katz also cannot anticipate its dependent Claims 15-16 and 18-25 no matter what the nature of the limitations that these claims might introduce.

II. Rejection of Dependent Claims 2-3, 5-12 Which Now Depend From Allowable Claim 4, Dependent Claims 28-29, 31-38 Which Now Depend From Allowable Claim 30, Dependent Claims 41-41, 44-51 Which Now Depend From Allowable Claim 43, Under §103(a) As Being Obvious Over Katz (USPN 5,921,846) and Applicant's Admitted Prior Art (AAPA)

The Applicants respectfully argue that the Examiner commits clear error in this rejection because of the reasoning given in any one of the following three lines of thought:

A. The Applicants note that the dependency of the dependent claims have been amended so that they now all depend from what the Examiner has admitted are allowable independent claims. Thus, no matter what are the nature of the limitations imposed by such dependent claims, it follows their dependency from admittedly allowable claims implies that these dependent claims are also allowable.

B. Applicants argue that the Examiner has not, as required by law, provided a reason that suggests the desirability of combining the references in the manner cited.

"If references are said to render the claims obvious, there must be something in the references which suggest the desirability of their combination." Lilton System, Inc., v. Honeywell, Inc., 87 F.3d 1559, 1569, 39 USPQ 2d 1321 (Fed. Cir. 1996) ("*[T]he record discloses no teaching or suggestion to combine any of these references. The absence of a suggestion to combine is telling in an obviousness determination*"); In re Paulsen, 30 F.3d 1475, 1482, 31 USPQ 2d 1617 (Fed. Cir. 1994); Heidelberger Druckmaschinen AG v. Hantscho Commercial Products Inc., 21 F.3d 1068, 1072, 30 USPQ 2d 1377 (Fed. Cir. 1994) ("*When the patent invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a combination*"); Panduit Corp. v. Dcnison Mfg. Co., 810 F.2d 1561, 1568, 1 USPQ 2d 1593 (Fed. Cir.) ("*elements of separate prior patents cannot be combined when there is no suggestion of such combination anywhere in those patents*").

C. Applicants argue that the Examiner has not fully considered the nonroutine nature of the experiments that it took for the inventors to discover the limitations that are cited in the dependent claims 2-3, 5-12, 28-29, 31-38, 41-42, and 44-51. This is relevant since the Applicants contend that "an invention is nonobvious when the invention resides in a choice of particular dimensions, ... or other parameters ..., and it is clear that these parameters could not be arrived at by routine trial and error."

The basis for this opinion is found in "Guidelines For Examination In the European Patent Office," Chapter IV, page 68, where the point is made that an invention is obvious "*when the invention resides in a choice of particular dimensions, ... or other parameters ..., and it is clear that these parameters could be arrived at by ROUTINE trial and error.*" The Applicants argue that it follows that when such parameters CANNOT be arrived at by ROUTINE trial and error methods – such an invention is nonobvious (i.e., the use of NONROUTINE techniques can give rise to a nonobvious invention).

The Applicants assert that the use of NONROUTINE experimental techniques and NONROUTINE trial and error methods were necessary for the development of the present invention; consequently the present invention is nonobvious.

Evidence for this situation includes the following:

1. Inventor Umang Anand was the graduate student of fellow Inventor Prof. Katz, who is also the Sole Inventor of USPN 5,921,846, which is the principal piece of prior art cited by the Examiner against the claims of the present application.

Under Prof. Katz's direction and over a three-year period, Mr. Anand conducted numerous NONROUTINE "cutting jet" experiments and development programs in order to improve upon the design of Prof. Katz's "porous mixing tube and lubrication reservoir" as revealed in USPN 5,921,846.

2. Inventor Anand's experiments and research work were so extensive, NONROUTINE and "NONOBVIOUS" that they were the basis for his doctoral dissertation for which he was awarded a Doctor of Philosophy degree from the Department of Mechanical Engineering of The Johns Hopkins University in 2002. The title of his doctoral dissertation was "Prevention of Nozzle Wear In Abrasive Water Suspension Jets Using Porous Lubricated Nozzles."

3. Mr. Anand's FIRST-EVER-PERFORMED experiments was also sufficiently NONROUTINE AND "NONOBVIOUS" that a technical paper describing his research was published in the ASME Journal of Tribology, vol. 125(1), pp. 168-180, January 2003, and entitled "Prevention of Nozzle Wear In Abrasive Water Suspension Jets Using Porous Lubricated Nozzles."

4. The sophisticated, FIRST-EVER-PERFORMED experiments documented in Mr. Anand's ASME Journal of Tribology article (e.g., see FIGS. 2 and 10) involve NONROUTINE TRIAL AND ERROR methods. The process parameters identified in Dr. Anand's FIRST-EVER-PERFORMED experiments using such sophisticated methods CANNOT be said to have been found by utilizing "routine trial and error" methods.

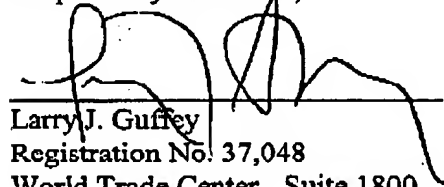
5. Dependent claims 2, 5, 28, 31, 41 and 44 cite NONROUTINE experimentally determined parameters ("passage ... in the range of 50-3,000 microns; flow rate ratio in the range of 1/10,000 - 1/20) which are not obvious in view of Prof. Katz's USPN 5,921,846. If they were, Prof. Katz and Mr. Anand wouldn't have needed to spend three years in conducting UNIQUE, SOPHISTICATED, FIRST-EVER-PERFORMED and NONROUTINE experiments to extend Prof. Katz's own earlier work to discover these parameters.

REQUEST FOR RECONSIDERATION

In view of the above, it is submitted that the Applicant's amended claims are in condition for allowance. Reconsideration and allowance of claims 2-13, 15-26, 28-39 and 41-52 are requested.

Alternatively, with few amendments, it is submitted that claims 2-13, 15-26, 28-39 and 41-52 could easily be placed in a condition for allowance. The Applicants hereby request that the Examiner establish informal communications with the Applicants' Attorney for the purposes of determining what form such amendments might take.

Respectfully submitted,



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